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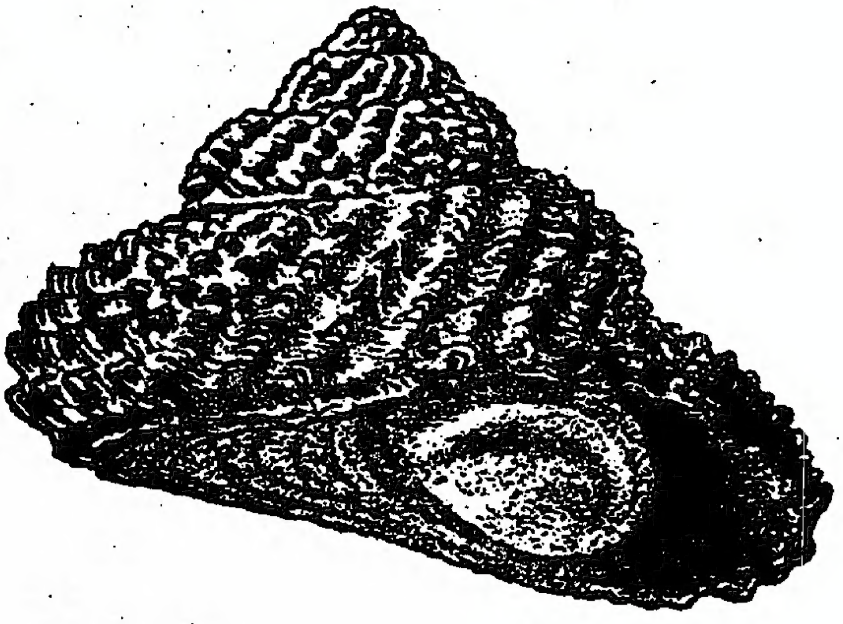

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POWELLIPHANTA IN THE NORTH ISLAND

by P.R. Jamieson

Judging by subfossil remains, Powelliphanta once had a wide distribution covering most of the lower part of the North Island. However, today it survives in scattered remnant colonies, particularly around the township of Levin.

Most of the colonies came to light in the 1930's and are best described in Powell's "Paryphantidae of New Zealand", No.5 (Records of Auckland Inst. and Mus. Vol 3 No.2) and No.6 (Vol 3 No.6). In these papers each colony is listed along with the colour variants contained within them. Originally seven forms were named. However, these are now all referable to Powelliphanta hochstetteri hochstetteri.

It has now been over fifty years since the North Island Powelliphanta were first described, and there have been many changes in the plains surrounding Levin where most of the forms were first described from. Some of the original colonies, especially the smaller ones, have been destroyed. Grazing by cattle has opened up others leading to increased dryness which is unsuitable for snail survival. Predators such as hedgehogs, rats, pigs, and introduced birds have taken a VERY heavy toll in many colonies, all but wiping out several.

This article now describes the state of the North Island Powelliphanta as they exist today. Each form is described individually, and some assessment is made of the condition of each colony.

Forma marchanti:- This is by far the most widely distributed form, being recorded from much of the Ruahine Range, Kaweka Range, Waikaremoana, Mt Egmont, and the upper Waitotara River (old dead shells only). The only place I have collected this form is the Mokai Patea Range, an outlier of the Ruahine Range, east of Taihape. Collecting there involves a two hour steep climb up 2000 feet along a track leading to Mt Colenso. Over the top are thickets of Olearia trees where the snails occur. Snails are not uncommon, but most have been damaged by predators. This form has the greatest chance of survival, due to its large range and somewhat impenetrable habitat, but predators such as pigs do take a heavy toll. The liberation of wekas on Mt Egmont could spell doom for the small colony there.

Forma tararuaensis:- This form was found at the northern tip of the Tararua Range. The type locality is one mile west of Kaihinu Peak. Even when described it was heavily trampled by cattle and although I have not visited it, it seems unlikely that snails survive there. Two other colonies exist near the type locality:- Northern side of Kaihinu Peak; snails were common when I visited there in 1973, but a further visit in 1975 found little else but pig-crunched shells. This was an extensive colony, but pigs are capable of destroying even a large colony as has happened to some Placostylus hongii colonies. In the upper Kahuterawa Valley the snails are quite distinct from the Kaihinu colony, being darker green on the base, and more sparingly lined on the dorsal surface. Fortunately this colony seems to be holding its own.

Several colonies exist well to the south, in the Shannon Heights basin. However, these show hybridation with nearby latizona and florida forms. Snails can be found in tiny patches of scrub beyond the end of the road, and, amazingly, also in a plantation of radiata pine trees where they live under drifts of pine needles. Snails also occur in the large patch of bush further up the valley, where they are not uncommon. There is no house nearby to ask permission of access, but beware of an irate farmer wielding a shotgun as someone once encountered!!

Forma koputaroa:- Kopuraroa is a lowland form found near Koputaroa, north of Levin, which probably developed due to partial segregation by extensive swamps. I know of the tiny bush remnants, both surrounded by swamp where snails persist, collecting conditions are atrocious, tangles of blackberry and gorse, sharp edges sedges and thousands of mosquitoes. During winter both colonies are flooded from the surrounding swamp which kills many snails. Rats are also present. This form must surely be a candidate for extinction in the near future.

Forma latizona:- The type locality of this form, which is Greenaways Bush, Upper Makahika stream, still stands. It is a large area of original bush, but snails appear more common in punga groves at the edge of the bush than in the bush itself. Snails have also been found along the northern side of Gladstone Road, but are scarce. Another colony, probably referrable to this form but originally designated to traversi, is in Adkins Bush. This is on the eastern side of the Makahika Stream and north of the Levin water supply tanks. This small bush remnant has been well trampled by cattle and snails are rare. They may still persist in supplejack tangles where cattle cannot penetrate, but I have only encountered one live snail during two visits.

Formatraversi and forma florida:- These occur within the vicinity of the town of Levin. There is a marked overlap of the two forms due to past changes in the course of the Ohau River. Most colonies contain snails referable to both forms, and many hybrids. They are therefore discussed together. Ten separate localities have been recorded:-

Lake Papaitonga (Buller's lake) .... surrounded by bush with a dense tangle of undergrowth much of which is swampy. Snails are easiest located at either the western or eastern end, where they are not uncommon.

Waiopehu Reserve .... this is the type locality of the traversi form, although both traversi and florida occur here. Although the area is designated as a reserve, obviously the hedgehogs and rats are not aware of this, and have almost exterminated this important colony. Unless something is done soon, all snails will be exterminated here.

R.A. Prouse's Bush.... a broken fresh shell is my only find here, although a few snails may still persist; but this bush patch is drying out.

H.J. Prouse's Bush.... destroyed for housing development.

Park's Bush, Kawiu Road....(in foothills east of Waiopehu Reserve).. I have not collected there, but, looked at from a distance, it appears unlikely that snails still live there.

Florida Road...(south side of Ohau River)...snails are hard to find, mostly living in bracken at bush edge. Probably a reasonable number still survive.

Kimberley Road...(north side of Ohau River)... snails persist under bracken at bush edge, but are very rare.

Muhunoa East...this is the type locality of the florida form. Despite several visits I have not seen any snails, though others have, and apparently they are not uncommon if you can find the right spot. They are supposed to also occur under bracken and blackberry at the southern edge of the bush. I believe they are probably still there, knowing how these snails prefer that sort of habitat.

Kirkcaldies Bush... this is supposedly a reserve, but on private property, which I have not visited. It is small, and snails are unlikely to be common.

Of the ten localities, one has been destroyed, and survival for long is doubtful in six others. Only three colonies hold their own, and one of these is small.

Forma otakia;- This is the southernmost recorded living colony, on both sides of the Otaki River. Along Rahui Road there are several patches of bush, but only one that I know of harbours snails. This is pronanly the type locality, and is a narrow stretch of bush bordering a small stream. The lower part of the bush is open with little cover for snails. Further up I have found a number of dead shells, some in very fresh condition, including two juveniles. I did see one live snail, but even that had been chewed by rats. Survival in this area is precarious. Inland from Te Horo is another colony in a larger bush area but open to cattle. Consequently much of its lower area has been trampled. It may still persist, but in very low numbers and it is doubtful if there are sufficient to maintain existence of the colony much longer. Even in 1936 Powell questioned whether this form would survive. There may be as yet unrecorded colonies along the foothills inland from Otaki. Let us hope so!!!

Two other records of Powelliphanta occur south of Otaki. These are both of collapsed shells once embedded in peat bog. They were first found at the Wallaceville Swamp, Mungaroa Valley, east of the main Hutt Valley. There I have found them brought to the surface when farmers have ploughed paddocks. Some are in perfect condition, just squashed flat by their embeddedment. Collapsed snails have also been found at Rawmati, especially as land has been cleared for housing development, but they are scarce. Any fresh cleared area is worth investigating thoroughly, and may bring to light a specimen brought to the surface.

The future of the North Island Powelliphanta seems bleak, especially for those forms around the Levin area, as is the future of most wild life too near to growing urban development. It would be sad to see these unique snails disappear completely.

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KAPITI ISLAND FIELD TRIPS

On the 27th February and 13th March 1982 field trips to Kapiti Island were organised by the Club. The following is a list of shells found on both trips. An extensive list of shells collected at Kapiti has previously been published in "Cookia", Vol. 3 No. 3, totalling 158 species. This was based on the combined efforts of a weekend trip by the Victoria University of Wellington Biological Society, and the collecting done by Mr and Mrs Wilkinson during the years that he was the caretaker of Kapiti. Therefore, the following list will give the collector some idea of what might be obtainable on a one day trip; can be used as a comparison with the former lists; as well as being a record of the Club field trips.

Seventy nine species were recorded, seven of these being additions to the previous list (these are underlined). Species were recorded, even on the basis of old or broken specimens, so long as they were identifiable. Species of particular interest have accompanying notes in brackets.

Amaurochiton glaucus (Gray 1828)
Haliotis iris Gmelin 1791
Haliotis australis Gmelin 1791
Haliotis virginea Gmelin 1791 (several specimens)
Scutus breviculus (Blainville 1817)
Cellana denticulata (Martyn 1784)
Cellana ornata (Dillwyn 1817)
Cellana radians (Gmelin 1791)
Cellana stellifera (Gmelin 1791) (Common as wash-ups, several noted alive on low tide rocks)
Patelloida corticata (Hutton 1880)
Melagraphia aethiops (Gmelin 1791)
Diloma nigerrima (Gmelin 1791)
Diloma arida (Finlay 1927)
Diloma zelandica (Quoy & Gaimard 1834)
Diloma subrostrata (Gray 1835)
Diloma bicanaliculata lenior (Finlay 1927)
Cantharidus opalus (Martyn 1784)
Cantharidus purpureus (Gmelin 1791)
Trochus viridis (Gmelin 1791)
Trochus tiaratus Quoy & Gaimard 1834
Maurea selecta (Dillwyn 1817)
Maurea punctulata (Martyn 1784)
Maurea waikanae (Oliver 1926) (one good specimen)
Turbo smaragdus (Gmelin 1791)
Turbo granosa (Martyn 1784) (Most members managed to find several of these, mostly small specimens)
Astraea heliotropium (Martyn 1784) several adult, and a few small specimens, mostly worn)
Cookia sulcata (Gmelin 1791)
Nerita atramentosa (Reeve 1855)
Littorina unifasciata antipodum (Philippi 1847)
Maoricolpus roseus (Quoy & Gaimard 1834)
Serpulorbis zelandicus (Quoy & Gaimard 1834)
Struthiolaria papulosa (Matryn 1784)
Struthiolaria vermis (Martyn 1784)
Sigapatella novaezelandiae (Lesson 1831)

Maoricrypta monoxyla (Lesson 1831)
Tanea zelandica (Quoy & Gaimard 1832)
Xenophalium pyrum (Lamarck 1822)
Cabestana spengleri (Perry 1811)
Cabestana waterhousei (Adams & Sngas 1864) ??(a bleached worn specimen of what is probably this species)
Argobuccinum tumidum (Dunker 1862)(broken specimens only)
Mayena australasia (Perry 1811) (several good specimens)
Charonia lampas capax Finlay 1927 (one fresh but broken shell)
Poirieria zelandica (Quoy & Gainard 1833) (worn specimens only)
Muricopsis octogonus (Quoy & Gaimard 1833) (several good shells)
Xymene ambiguus (Philippi 1844)
Xymene traversi (Hutton 1873)
Thais orbita (Gmelin 1791)
Lepsiella scobina (Quoy & Gaimard 1833)
Haustrum haustorium (Gmelin 1791)
Cominella adspersa (Bruguiere 1789)
Cominella maculosa (Martyn 1784)
Austrofusus glans (Toding 1798)
Buccinulum lineum (Martyn 1784)
Penion sulcatus (Lamarck 1816)
Amalda australis (Sowerby 1830)
Amalda mucronata (Sowerby 1830)
Alcithoe swainsoni Marwick 1926
Alcithoe fusus (Quoy & Gaimard 1833) (One broken fresh shell)
Siphonaria zelandica Quoy & Gaimard 1833
Barbatia novaezelandiae (Smith 1915)
Glucymeris laticostata (Quoy & Gaimard 1835)
Mutilus edulis aoteanus Powell 1958
Perna canaliculus (Gmelin 1791)
Gregariella barbata (Reeve 1858) (one complete shell)
Atrina zelandica (Gray 1835)
Ostrea lutaria Hutton 1873
Monia zelandica (Gray 1843)
Venericardia purpurata (Deshayes 1854)
Mactra murchisoni Deshayes 1854
Spisula aequilateralis (Deshayes 1854)
Paphies subtriangulata (Wood 1828)
Dosinia subrosea (Gray 1835) (single valves only)
Dosinia anus (Philippi 1848)
Tawera spissa (Deshayes 1835)
Dosina zelandica crebra (Hutton 1873)
Bassina yatei (Gray 1835)
Cleidothaerus albidus (Lamarck 1819)(three valves of this interesting species)
Argonauta nodosa Lightfoot 1786 (one shell 120mm, and several smaller ones. March is the best time to find these according to the Kapiti Island Ranger)
Potamopyrgus antipodarum (Gray 1843)

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A new bibliography of New Zealand Molluscan Literature

A new publication of value to New Zealand shell collectors has recently appeared under the title of "Bibliography of Publications on New Zealand Mollusca 1973-1980", by Dr R.C.Willan. This has been issued as Miscellaneous Publication No. 94 of the Oceanographic Institute.

Dr Willan has compiled a list of publications further to the list in Powell's "New Zealand Mollusca"(1979). He has very thoroughly researched the literature printed in the period and has recorded 435 items. It will be of interest to members of the Wellington Shell Club to note that 30 papers which have appeared in "Cookia" are included. An analysis of the list shows the most prolific writers to have been ..... Dr A.G. Beu, 26 papers, plus 4 jointly with other authors: Dr F.M. Climo, 26 papers, plus 2 jointly with other authors; N.W. Gardner, 28 papers; W.O. Cernohorsky, 17 papers, plus one with another author.

Besides listing the papers by authors in alphabetical order, an index according to subject is also provided.

Centenary of the death of Charles Darwin

This issue of "Cookia" is being published very close to the centenary of the death of Charles Darwin, who died on 17 April 1882.

Darwin's influence on the thought of the nineteenth century is so well known that we do not need to recount it here, Although he did collect shells at several places during the voyage of the "Beagle", he was not really a conchologist. The shells he collected were dispersed after his arrival back in England, and not retained as a collection.

The "Beagle" was at the Bay of Islands from the 21st to the 30th December, 1835. He did not really enjoy New Zealand as is evident from the entry in his journal for the 30th December.

"In the afternoon we stood out of the Bay of Islands, on our course to Sydney. I believe we were all glad to leave New Zealand. It is not a pleasant place. Amongst the natives there is absent that charming simplicity which is found at Tahiti; and the greater part of the English are the very refuse of society. Neither is the country itself attractive. I look back but to one bright spot, and that is Waimate, with its Christian inhabitants".

He made no mention of having collected any shells while in New Zealand.

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A TRIP TO SOME GREAT BARRIER REEF ISLANDS

by Meg Taylor.

After a flight from Auckland across the Tasman, we had another just as long to Townsville, and then a launch trip out to Magnetic Island. As the launch motor was "on the blink", we had to be landed on the nearest point of the island to Townsville, and this meant a long taxi journey to our resort. We were lucky in that the driver warned us about the curlews and their weird cries. No sooner had we settled in bed than the peace was shattered by maniacal laughter followed by blood-curdling screams. A murder, perhaps? No, only the curlews.

That did not stop us from being up at first light to explore. We found plenty of limpets on the rocks, among them prized key-holes. As the tide receded we "had a ball" on the exposed coral. We had to watch the tide, though, as it cam in very fast. A shell like our Scutus breviculus seemed quite common, and we found Vexillum plicarium, and one small clam, most of the specimens of which were too firmly wedged in the coral for us to dislodge. My best find that day was one Angaria delphine; not a very good specimen, but still my first. A long sandy beach was our next area to explore, and this presented a mixed bag; a few twisted arks, beautiful turkey wings (Navicula ventricosa), plus many donax. The beach was very steep, and as the tide went out many small streams appeared exposing numerous Pharaonella aurea. They are the ones with a tail and the colours very variable from white to rose pink and yellow, with all shades inbetween. The next time we went to that beach there was not one to be found. I guess that's shelling!! There were also other Tellinidae and two varieties of Architectonica. Further up the beach were Chlamys. Near the rocks we found Littorina, Morula tuberculata, one very young egg cowry, several Bursa rana, Phalium bisulcatum, and numerous Cypraea.

Another sandy bay offered Solen vagina, Strombus urceus, and a few Ruditapes as well as Lioconcha castrensis and some small olives. In the rock pools were many Nerita and a few Asaphis violascens and Chicoreus brunneus. In the vicinity of the pools were Polinices tumidus, Conuber incei, Spondylus and small Turridae. Further round the beach in the mangroves were small green snails and Telescopium telescopium.

By now our visit to Magnetic Island was at an end, so we did the launch trip back to Townsville and boarded a plane for Rockhampton. We had a few days at Yeppoon, visited the Shell Museum, and, of course, did some collecting. There was not a great deal to collect as the tides were very high in the day time, but we did find numerous Murex brevispinus, a few Architectonica, some very nice Venus embrithes, and on the beach were hundreds of Haustator cingulifer. Key-hole limpets were also in evidence, some very large; also a number of Mactra, Tellina species and Nerita. Our best find was at the mouth of the river, where Amusium balloti were plentiful. As the river was rather deep, and the tide coming in rapidly it was a case of "snatch and run".

Great Keppel Island, our next port of call, is about an hour and a half by launch out from Yeppoon. The first shells to greet us here were some small tusk shells, Cadulus; quite a large wash-up of them. The same sandy beach produced a number of zebra volutes, donax, dog-whelks, Polinices, Chlamys, Fimbria frimbriata, Architectonica, Conus virgo, Conus tessulatus, as well as a small bluish cone which might be a young Conus distans. Further round on a rocky headland we found a wonderful array of Asaphis violascens of varying colour from purple to pink and white. This proved to be a good spot as the water here was deep and washups good. Nerites were many and varied in the rock pools. After our party had walked over it I found, wedged in the rocks, a beautiful pale yellow carrier shell, Turgurium exutum, also a small Exenophora konoi.

On another sandy beach on the island were a few sunrise shells, and the high water mark was littered with Solecurtus sulcatus, and as the tide came in, golden tellins (Phylloda foliacea) were being dumped on the beach and washed out again, and we had to move quickly to retrieve them....well worth the effort though. Our last beach of real interest was round another rocky headland where we collected Morula marginalba and many small top shells and cowries. This was a rather strange bay as it was all shingle running down to huge smooth rock slabs at right angles to the sea. My first find here was a young melon bailer (Melo amphora) in good condition. Then followed Strombus campbelli, Strombus vittatus, a good specimen of Strombus aurisdianae, and a purple coloured sea-egg five inches across, and some very large Chama.

After collecting a few Ruditapes variegata and one Terebralia palustris and a number of land snails we thought we had quite enough to bring back to New Zealand.

I wonder what would be left for next time!

WHAT HAPPENED TO THEM ?

I have been on Paekakariki Beach off and on all my life and there have always been Dosinia anus (Philippi 1848) shells washed up on the high tide line. I was there on 3rd March 1982 and there were hundreds of them; all sizes of perfect pairs of shells, all open and clean, and with no seagul chips on them. They extended from the concrete drain at the south end of the parade northwards along the beach, and were extremely numerous near the first stream.

I did not go right to the north end of the beach. Up there by the second stream one can usually find Dosinia subrosea (Gray 1835), and that is where I have found Solemya parkinsoni Smith 1874 washed up in the sand above the high tide level.

Among the Dosinia anus were hundreds of green mussels, Perna canaliculus (Gmelin 1791) which live on the rocks in the south corner of the bay. They were nearly all about 6cm. long, freshly clean open pairs, with no bird chips.

I wonder if the hot summer had been too much for the shellfish, and the heat of the sun at low tide had killed the mussels, the byssus had lost its hold, and then the small animals in the sea and sand had had a party cleaning out the open shells before they were washed up on the beach. Whatever it was, had made a good job of it. Some mussels were still in clumps but they were mainly loose single shells.

I dont know the cause of the death of the Dosinia anus either. They live at and below low tide in the sand.

Editor's note

This phenomenon of a large wash-up of dead bivalves on Wellington west coast beaches has been observed over the years. It has long been known that the best collecting can be done after the third tide after a heavy northerly blow. However from time to time an extra heavy death toll seems to occur in one species or another of bivalve on this coast. Large numbers of Mactra discors, Spisula aequilateralis and Bassina yatei have been noted as if there had been some special cause of death by disease or otherwise in the particular species. No satisfactory explanation has been worked out.

One of the most fantastic wash-ups is that of Atrina rigida which occurred at Sanibel Island, and is illustrated in the National Geographic Magazine July 1949. That, however, was the result of a storm.

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"Sympatric Species Diversity of New Zealand Snails"

At the June 1981 meeting of the Club, Dr F.M. Climo gave an outline of the research that has been undertaken by Dr Alan Solem, Mr David Roscoe and himself into the distribution of New Zealand shells, particularly with reference to the numbers of species found living together in bush areas. The results of their studies have now been published in a paper with the title shown above. This paper is in the New Zealand Journal of Zoology 1981 Vol.8, pages 453-485.

The following is the text of the summary compiled by the authors themselves:

"Surveys for land snails of several bush patches on or near Manukau Peninsula south-west of Auckland, resulted in finding up to 60 species (only 3 introduced) in a single 4ha. patch of bush. Analysis of records from all bush patches suggests that an essentially sympatric community of about 72 native species is a probable reality, whereas in most areas of the world the sympatric existence of more than 15 land snail species is highly unusual. A first attempt at indicating the moisture, space, and foraging preferences of the 89 land snail species recorded from the Manukau Peninsula is presented, and an attempt is made to indicate broad categories of species association or habitat preference within this area. Many species occur throughout litter types (40-75% of all species in one bush patch would be in a 20x30 cm. bag of litter from one spot), and it is hypothesised that the qualities of moisture retention and air space are more significant to the snails than the species of plant that provided the litter. This sympatric land snail diversity is normal from the central North Island up to Northland, but diversity levels drop sharply in the far north and southward from Mt Egmont/East Cape. Most of the South Island has 15-20 sympatric land snail species, with even greater reduction on Stewart Island and the subantarctic islands. It is hypothesised that the high sympatric diversity level reached in the Manukau area results from equability of the moisture regime. This diversity is based in accumulation of phyletically unrelated taxa, not localised speciation. The land snail population here has the aspect of a mature community. Even few-hectare patches of bush can hold near-maximum land snail communities, if they are proctected against burning, clearing, and trampling of the litter by stock. The preservation of such patches is urged, for the conservation not only of the land snails but of the other soil micro-organisms that coexist.

From the above summary of the results of their studies it will be obvious that a very intensive research project has been carried out. In no other country are so many species of land shells found to be living together in the same bush or forest habitat area. It has been established that in most parts of Australia, Africa and America only as few as 5-7 species can be found living together, and areas with 10-12 species are uncommon. In parts of Europe 12-18 species living sympatrically are common, and this level of numbers is found in a few situations in some Pacific Islands, in the Greater Antilles, and in rain forests in northern New South Wales and Queensland.

A number of tables spread through the paper illustrate the results of sampling at the various localities studied. One of the most interesting, however, to collectors, is the following which highlights the outstanding work that is being done at the National Museum.

Taxonomic Components of New Zealand's Land Snail Fauna

Family	Species Listed by Powell 1976	Species in National Museum Collection
Hydrocenidae	1	1
Liareidae	28	32
Succineidae	1	1
Athoracophoridae	24	24
Achatinellidae	2	2
Charopidae	145	218
Punctidae	76	204
Paryphantidae	35	35
Bulimulidae	3	3
	315	520

Each of the sampled areas of the Manukau Peninsula is discussed in detail with analytical tables, and a general discussion is given of sympatric diversity levels in other parts of the country. Of great interest to collectors will be the long list of land snail species whose types of habitats are described in detail. This will be a valuable guide to collectors as to the types of habitat in which particular species may be found.

One of the main frustrations of students of the distribution of New Zealand native snails is that so little is known of their biology. Their feeding habits, reproductions, and life history in general, are little understood, and these aspects of our native snail life present scope for lifetimes of research. There is also the fact that such a large number of new species have been brought to light in recent years that have not yet been named.

This paper is an important contribution to the literature on our land snail fauna, and one that a serious collector cannot afford to be without.

The following notes on some South Island collecting places were compiled by Peter Cresswell, and were originally published in our Bulletin No.36, 1975.

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(1) Shag Point - and the stretch of coast for some two miles north. Here quite extensive reef areas extend parallel to the shallow sandy beach. In many places quantities of smallish rocks and boulders occur from mid-tide downwards. Most are easily turned over. The water is very clear with only small patches of weed amongst the rocks. Commencing at low water is a broken belt of kelp, the holdfasts of which house substantial populations of small species including the chiton Frembleya egregia H.Adams. The undersides of the boulders are often quite hollow and contain large numbers of otherwise hard to find small species.

(2) Otago Harbour - particularly along the western shores between Port Chalmers and Spit Beach. Over a six month period with collecting being very sporadic I obtained 111 species from the intertidal zone. The range of microenviroments within the area is extensive from sandy beaches, mud flats, reefs to rocky promontories. A good range of shells is obtainable at low tide from any of the small headlands between Waipune Bay and Ravensbourne, with common genera being Merelina, Dardanula, Rossoina, Estea, Odostomia, Evalea, Neogyraleus and Nucula. On the fronds of low tidal weeds the minute Incisura Lyttelтonensis (Smith) is very common, and attached to the base of the same weed can be found the small bivalve Hochstetteria meleagrina Bernard. This whole area is rich in molluscs, and provided the tide is right, well worth attention.

(3) St Kilda and St Clair, Dunedin - here the sandy beaches are rather sparse at the best of times, but at the southern end of the beach there are a number of rock platforms containing pools which are replenished with each tide. Here may be found Gaimardia forsteriana Finlay, and Macquariella aucklandica Powell, as well as a good selection of small limpets. On the steep cliff faces about 100 yards south, is found the limpet, Notoacmea scopulina Oliver

(4) Waipapa Point, Southland - a really exciting place for collecting with extensive rock platforms jutting out into the sea, off which is very deep water. Here I have found species nor normally encountered in the littoral zone, particularly amongst the minute. A good haul can always be made by collecting quantities of shell sand from under the large, flat rocks which litter the platforms. Some of these are too big to turn over without a crow-bar, so if really outstanding hauls are anticipated, some mechanical assistance is a must. Among the smaller varieties which are invariably found are Asteracmea suteri (Iredale), Paxula transitans (Murdoch), Zemitrella rosea (Hutton), two species of Evalea and members of the genera Turbonilla and Odostomia. One thing to remember when contemplating a visit to Waipapa Point: the platforms are only exposed at low tide!

(5) Ocean Beach, Bluff - situated behind the Ocean Beach Freezing Works about a mile north of Bluff. Access is gained by crossing the paddocks near the works (permission from the works manager). This beach is rocky and opens directly to Foveaux Strait. Among the rocks are the usual range of species common to the gen area, but it is an excellent spot for Gadinalea nivea (Hutton), which amass in their thousands on the undersides of overhanging boulders. On the same boulders are found Notoacmea pileopsis (sturnus?) (Hombron & Jacquinot) - very large specimens.

MARFELL BEACH, MARCH 1982

by Barbara Sutherland

On the 27th March four members of the Wellington Shell Club (Peter Jamieson, Pat Lakeman, Jenny Raven and myself) went on a day trip to Marfell Beach. The day started with a sprint on to the 7.20a.m. Picton Rail Ferry at Wellington ... at 7.10 Jenny and Pat were looking for a hub-cap in the Ngaio Gorge. The sea was calm and we had a good trip across, arriving at Picton at about 11a.m. Peter organised a rental car and we were at Marfell Beach about an hour later. From the car park we walked very slowly round to the point, turning over seaweed and pieces of debris at the very high tide mark. The Anchomasa similis were most abundant here and we all collected a good sized pair of shells each. The tide as low and as we walked further round we moved to the rocks and rock pools. This area was very productive and some nice Maurea punctulata were found. Two live specimens of Argobuccinum tumidum were found but most of the shells of this species were found washed up at the very high tide mark. Some of the shells at the high tide mark contained the dried up remains of the animal and had the operculum in them, indicating that they have been washed up only recently. Pat and I found that some of the specimens were more dead than alive, but we did'nt come to any conclusion as to why. On our way to the point we went along separately but occasionally came across one another and compared finds and locations. From the point we could see the Cape Campbell Lighthouse. Jenny and Pat walked along the beach but didnt find anything different. If we had had time we would probably have walked round to the lighthouse. It was then time for us to start back to the car park. Because the tide was coming in we had to walk along the side of the cliff and that took us scrambling over rocks at one point and past piles of stinking fly-ridden seaweed at another.

We had a pleasant trip back to Picton, and after returning the rental car, had ten minutes to spare before the 6.40p.m. ferry departed for Wellington. During the crossing we compared specimens, exchanged ideas and notes on experiences and collecting localities. A great day was had by all, and it was agreed that another trip later in the year would be worth while.

The following is a list of the species of shells collected at Marfell Beach on 27 March 1982.

Species collected alive are indicated by an asterisk(*)
Species collected as wash-ups are indicated by a cross (+)

Haliotis iris	+	
Haliotis australis	+	
Haliotis virginea	+	one large specimen 66mmx41mm
Scutus breviculus	* +	one specimen 69mm
Cellana denticulata	*	
Cellana flava	*	
Cellana ornata	*	
Cellana radians	*	
Patelloida corticata	*	these three species on or
Notoacmea parviconoidea	*	among mussels at low tide
Notoacmea scopulina	*	level
Melagraphia aethiops	*	
Diloma arida	*	
Cantharidus opalus	* +	
Cantharidus purpureus	+	very common
Micrelenchus sanguineus	+	
Micrelenchus tenebrosus	*	common
Cantharidella tesselata	*	
Trochus viridis	+	

Trochus tiaratus * +
Maurea puncturata * one specimen 45mmx50mm
Turbo smaragdus +
Turbo granosus +
Cookia sulcata +
Maoricolpus roseus +
Sigapatella novaezelandiae +
Maoricrypta monoxyla +
Argobuccinum tumidum * + only 2 live
Tanea zelandica +
Xymene ambiguus +
Xymene aucklandicus + one only
Paratrophon patens... a hermit crab occupied this shell. the species is usually found from west Nelson down to Stewart Island and up the east coast of Otago to at least Timaru.
Thais orbita *
Lepsiella scobina *
Haustrum haustorium *
Lepsithais lacunosus +
Cominella adspersa +
Cominella maculosa *
Austrofusus glans +
Buccinulum lineum *
Buccinulum vittatum littorinoides *
Penion sulcatus * + common
Amalda australis +
Amalda depressa +
Alcithoe swainsoni +
Siphonaria zelandica *
Benhamina obliquata * one only

Glycymeris laticostata +
Glycymeris modesta +
Mytilus edulis aoteanus +
Perna canaliculus + huge single valves
Aulacomya ater maoriana * +
Xenostrobus pulex *
Modiolus areolatus + one specimen 85mmx49mm
Modiolarca impacta + one pair 42mm
Atrina zelandica +
Ostrea lutaria +
Pecten novaezelandiae +
Chlamys dieffenbachi + a single yellow valve
Venericardia purpurata +
Mactra discors + common
Mactra mudchisoni + common
Longimactra elongata + one single valve
Spisula aequilateralis + common
Paphies subtriangulata quovi +
Tellina gaimardi +
Gari stangeri +
Dosinia maoriana +
Tawera spissa +
Notopaphia elegans + single valves mainly - only one pair
Protothaca crassicosta +
Notirus reflexus +
Dosina zelandica +
Anchomasa similis +
Pholadidea spathulata +

For the information of readers not familiar with the geography, Marfell Beach is on the east coast of Marlborough, just north of Cape Campnell. It is 12 miles by road from Seddon, and is reached by a side road bearing from the main highway along the south side of Lake Grassmere. /

CONE SHELLS IN NEW ZEALAND

by W.J. Paul

New Zealand shell collectors have generally thought of our marine molluscan fauna as a temperate zone fauna lacking the typical tropical colourful families such as Cypraeidae, Condiae, Olividae, Strombidae, etc. However, there has been quite a history of the association of the Conidae with New Zealand in what one might call "both fact and fiction", and an exciting new chapter has now been added by the publication of a recent paper by Mr B.A. Marshall of the National Museum....."New Records of Conidae From the New Zealand Region"(N.Z.Jnl of Zool. 1981 Vol.8).

There is quite a substantial list of fossil species of Conidae which have been found in strata throughout the Tertiary. The recent fauna does not, however, contain any "living fossils" of this family, as it does in some others.

The first mention of living cones in New Zealand would appear to be the naming by Hutton in 1873 of Conus zealandicus. The type, a beach worn specimen, was collected at Spirits Bay. On subsequent examination it has proved to be a dead specimen of the common southern Australian species Conus anemone Lamarck 1810. The name zealandicus therefore becomes a synonym of anemone. J.G. Walls in his "Cone Shells, A Synopsis of the Living Conidae" has treated zealandicus as a synonym of aplustre Reeve 1843. On what grounds he based this is not apparent.

The next mention of living Conidae in this country appears to be the discovery of a living specimen of Conus mammoreus Linne 1758 at Farewell Spit. This was recorded by Miss M. Mestayer in the N.Z. Journal of Science and Technology Vol 1, 1918. How that shell arrived at Farewell Spit is a mystery. Powell has suggested that it was due to shipping. It is quite obvious that a tropical species of marine mollusc could not survive and breed in the rather vigorous conditions pertaining at the Spit. Conus mammoreus has never been considered a component of the New Zealand fauna.

A rather curious reference to cones in New Zealand is that of Harris in his "Catalogue of Tertiary Mollusca in the British Museum" (1897). He recorded conus catus Hwass 1792 from "a well-digging 10 feet in depth Chatham Islands". Finlay dismissed this record, saying "The specimen may have come from Chatham Island in Polynesia".

Although it is definitely not in the New Zealand fauna, it is interesting to note that Conus distans Hwass 1792 was originally described as being from New Zealand. S.W. Tinker in his "Pacific Sea Shells" included New Zealand in his description of the geographical distribution of the species, unaware of the error in the stated type locality. Conus distans has had its nuisance value in more ways than one. As is well known, the juveniles of some species of cones differ considerably from the adults, and this makes the identification of juvenile cones extremely difficult. A number of cases have arisen where new species have been based on juveniles of forms already named. In the case of distans the juveniles are grooved all over the body whorl, whereas the adults are smooth. As a result, C.arrowsmithensis Brazier 1896 from Marshall Islands, C.kenyonae Brazier 1896 from north west Australia, C.waterhousei Brazier 1896 from Solomon Islands, and C.chinoi Shikama from Japan, have all been named from juvenile specimens of distans.

In 1912 Iredale named a new species discovered at the Kermadecs as Conus kermadecensis. Specimens of this species were first collected in the far north of New Zealand in 1972 and occasionally since.

In 1966 M.A. Crozier recorded a small, very imperfect cone shell in a dredging in 440 fathoms of Three Kings Islands ... probably identifiable as Conus howelli Iredale 1929.

The work now published by Mr Marshall adds a new chapter to the story of cones in New Zealand. In January 1979 National Museum staff on the "Tangaroa" obtained considerable cone material in the course of dredging off the east coast of the North Island and at oceanic stations to the north and west of New Zealand and in the vicinity of the Kermadec Islands.

Conus kermadecensis is now recorded from a much larger area in the vicinity of New Zealand, extending as far south as the Bay of Plenty, near White Island.

Conus raoulensis Powell 1958 previously considered confined to the Kermadec group was collected off the Wanganella Bank, north west of Cape Reinga.

Conus howelli Iredale 1929, originally named from Australian waters, was collected as far south as the Bay of Plenty, close to White Island.

Conus teramachii (Kuroda 1956) was, rather surprisingly, collected off the Kermadecs. The species was originally named from Japan, and is known from the China Sea, Taiwan, and around Madagascar and Mozambique.

Conus smirna Bartsch and Rehder 1943 (= profundorum Kuroda 1956) was another surprise. Previously known only from Japan and Hawaii, this shell was collected at the Wanganella Bank and at the Silent I Seamont in latitude 35 south, east of the Bay of Islands. In addition to extending the known geographical range of C.smirna, the data collected also increases the known depth range of the species making it the deepest-living cone at approximately 1,100 metres.

The shells collected by the expedition have been deposited in the National Museum.

These additions to the list of cones in New Zealand waters make a significant change in our marine molluscan faunal list.

SHELLS ACROSS THE TASMAN

by W.J. Paul

In the Wellington Shell Club Bulletin No 22(April 1970) I presented a list of molluscan species then known to be present in both Australia and New Zealand, and postulated that as time went on research would show that many species would be added to that list. At the Second Australian Shell Collectors Convention at Yeppoon, Queensland, in September 1970, I spoke on the subject of "Trans-Tasman Molluscan Relationships" and issued to the audience a printed list of species at that time recognised as living on both sides of the Tasman Sea. Through several issues of "Cookia" under the heading "Notes on Some Australian Shells in New Zealand" a number of species having distribution areas extending over both New Zealand and Australia have been discussed at length.

As the years have gone by it has become apparent that the relationship between the Australian and New Zealand marine molluscan faunas is even greater than was recognised in 1970. There have been two major factors contributing to this greater knowledge of the faunal relationships.

Firstly, it has become increasingly more evident that New Zealand and Australian conchologists have each been carrying on in their own merry way using names popular in their own territories for species having common Australian/Neozelanic distribution areas, without it being recognised that separate names were being used on the two sides of the Tasman for the same animal. Trans-Tasman comparison of specimens has resulted in the reduction to synonymy of a number of names in use in either New Zealand or Australia.

The other major factor has been the number of species new to New Zealand which have been brought to light in the course of deep water research and which are already known in Australian waters.

A list setting out all the species at present known to have Trans-Tasman distribution would by no means be final. On-going research is bringing to light still further species. The present position is really in a state of flux, and compilation of a definitive list should wait a while yet.

In 1927, in his "Further Commentary on New Zealand Molluscan Systematics", H.J. Finlay, discussing the influence of the Notonectian Current on the New Zealand moluscan fauna, wrote "Introduction by this means within quite recent times seens the most feasible explanation of the occurrence on New Zealand shores of most of our present Cymatiidae, and the few other species apparently identical with Peronian, Adelaidean or Maugean forms". He also remarked "Little close relationship in Recent times is determinable between the East Australian and Neozelanic molluscan faunas, relations wherever recognised being usually with the latter and Tasmanian species."

Today the situation is vastly different.

On page 12 of his "New Zealand Mollusca" (1979), Powell provides an analysis of the New Zealand mollusca by Classes and by type of habitat, By eliminating from his total of Gastropods all the terrestrial and fresh water species, the shell-less species, and the pelagic groups, we come down to what we may treat as "resident shelled marine Gastropods" numbering approximately 1300 species. Similarly,

by eliminating the fresh water species from his total of bivalves, we arrive at a figure of 350 resident marine bivalves.

A list presently compiled of shelled marine "resident" Gastropods of known trans-Tasman distribution numbers 100 species... that is, 7.7 percent of the total New Zealand fauna in this category.

Of the 350 marine bivalve species we can count 20 with Trans-Tasman distribution... or 6.0 percent of the New Zealand fauna in that category.

There are a couple of species of Amphineura known to live in both Australia and New Zealand, representing only 3.4 per cent of the 59 species recorded here; and one of these, Amaurochiton glaucus, is believed to have been transported to Australian waters by human agency. So we can really dismiss the Amphibeura in considering the relation of New Zealand and Australian molluscs.

There is no point in considering relations between the New Zealand and Australian Cephalopoda. The distribution pattern of Australian Cephalopods has not been the subject of any intensive study. These animals are very mobile and in fact such groups as Argonauta, Spirula and Nautilus are really pelagic, distributed at the mercy of wind and wave. Spirula is almost world-wide.

Similarly the pelagic Gastropods such as Janthina, Recluzian, and the Pteropods are carried so far and wide with surface movements of the ocean that their distribution bears no relation to the question of Trans-Tasman relationships and the origin in our New Zealand mollusca.

Naturally, as Finlay suggested, the closest relationship is with the fauna of New South Wales and Tasmania. As one proceeds westwards along the south coast of Australia to Victoria, South Australia and Western Australia the representation in the local faunas of species also found in New Zealand is seen to decline. However, there is in fact still a quite considerable relationship with the fauna in the far west. In the "West Australian Shell Collector" for December 1971, I presented a list of 23 Gastropods and 4 Bivalves common to both New Zealand and Western Australia. Research in the intervening years has shown that some 30 of 100 Gastropoda mentioned earlier have distribution sreas extending as far as the west coast of Australia.

So our knowledge of the Trans-Tasman relationships of the marine mollusca is now a far cry from what was recognised at the time of Finlay's writing 55 years ago.

This is but a brief summary of the presently recognised degree of relationship between the New Zealand and Australian marine molluscan faunas. I hope in a later issue of this journal to give a more detailed analysis, accompanied by an up-to-date list of species.

SHELL COLLECTING AT WAIHEKE ISLAND

by Jill Burnet

The editor's heart-rending plea for material for this magazine has prompted me to sort out the records of my findings on a trip to Waiheke Island a few years ago.

Waiheke Island lies in the Hauraki Gulf, and is reached by boat from Auckland. There is a regular boat service and in fact quite a number of people live on the island and commute daily into Auckland to work. A bus service runs from the boat wharf at Matiatia, on the western end of the island to the main residential areas. The island is quite large (approximately 155 square kilometres)... larger than I expected... and hilly. It has a long, very irregularly indented coastline, with hundreds of little bays and beaches tucked around rocky corners, the greater proportion of them without road access. During my stay I visited only half a dozen of the beaches in the main residential area, which represents less than half the island. I visited each beach only once, except Onetangi, which was where I stayed. This could account for the larger number of species which I found there. Onetangi is roughly half way along the island, on the northern coast. It has quite a long beach of course sand, with rocky headlands at each end. I found it a pleasant spot for both swimming and shell collecting. To the east, the island spreads out to its greatest width, is very hilly, mostly farm lands, and with few roads. To the west are the main residential areas on the narrower part of the island. Palm Beach is also on the northern coast, west of Onetangi. It is a small sandy beach.

Beyond the promontory on the western side of Palm Beach is Enclosure Bay, so called, I imagine, because of a chain of small rocky islets across the bay. The small beach is of shingle and sand, with rocky headlands at each side. This beach is a little further out than the others, but I found it well worth visiting. A few minutes walk along the road brings one to Sandy Bay... no shells here, but excellent swimming. Further west still, around more rocky headlands, is Oneroa, one of the main settlements. The beach there is quite long and sandy, but I found collecting there disappointing. Oneroa is on the north side of a narrow neck of land (rather like Evans Bay and Lyall Bay). On the south side is Blackpool and to the west the road runs across a hilly unpopulated peninsula to Matiatia. Blackpool has a long gravel beach from which one can look across to Auckland and it is like a harbour rather than open sea. I found it very calm and tidal... too shallow for swimming ... one seemed to walk miles just to get into water knee deep. At low tide the sea quietly recedes far out into the bay, and rises again just as quietly at high tide. Round the corner to the east (working our way back towards Onetangi, but on the south coast) is Furfdale, really a continuation of the Blackpool beach. Here I found only Chione stutchburyi in large numbers, and some Tellina liliana; so I have not included this locality in the table that follows. East of Surfdale is Ostend, which I did not really explore. It is an area of estuaries and mangrovs swamps. Going east and south from Ostend is Omiha, where I actually had my first day's collecting. It is a small gravel beach with rocky headlands. This is the last settlement on the southern coast, and the road runs north from here back to Onetangi.

I left Waiheke Island having thoroughly enjoyed my stay, but feeling I had not seen nearly enough of it.

On the following table I have listed the shells I found at each beach, with some indication of the relative quantities. A single asterisk indicates that only a few specimens were found, a double asterisk that the species was fairly common, and a triple asterisk that it was there in large numbers.

	Onetangi	Palm Beach	Enclosure Bay	Oneroa	Blackpool	Omiha
astropods						
ugali elegans			*			
ellana ornata	*		*			
ellana radians	*					
urbo smaragdus					*	*
rochus tiaratus	*					
rochus viridis			*			
elagraphia aethiops	***				**	***
iloma zelandica			**			**
iloma nigerrima						***
iloma subrostrata					**	**
iloma bicanaliculata	*					
icrelenchus dilatatus	*		**			
aurea pellucida		*				
mbonium zelandicum	***	*				
tisolarium egenum	**					
erita atramentosa	*	***		*	*	
ittorina unifasciata antipodum						***
amantus lutulentus					**	***
amantus subcarinatus			**		**	***
ricolpus roseus			*			***
colpus pagoda	*					
gapatella novaezelandiae		**	***			***
egalerus tenuis	**		***			
oricrypta costata	*	**	***			**
oricrypta monoxyla						**
truthiolaria papulosa	**					
ymene plebeius			**		**	**
ccinulum linea			*			
minella maculosa			*		*	*
minella adspersa	**				*	
minella quoyana			*			
minella glandiformis			*		***	**
rginella pygmaea			*			
ogyraleus sinclairi			*			*
ula quoyi					*	
hicardelus costellaris	*					
ivalves						
lemya parkinsoni					*	
ucula hartvigiana						**
lycymeris laticostata	*	**	***			
lycymeris modesta		**				
enostrobus pulux	*					
ecten novaezelandiae	*	*		*		
hlamys zeelandona	*		*			
hlamys zelandiae	*	*	*			
nomia trigonopsis	***	*	*			
rassostrea glomerata						***
enericardia purpurata	*	*	***	*		
leuromeris zelandica	**					
elaniella zelandica	*	*	**			

	Onetangi	Palm Beach	Enclosure Bay	Oneroa	Blackpool	Omiha
ivalves (Cont'd)						
ivaricella huttoniana	***					
yllita stowei	*					
osinia anus	***	**		*		
osinia subrosea	***	**				
osina zelandica						**
awera spissa	**	**		*		
assina yatei	*					
hione stutchburyi	*		***	*	***	***
rotothaca crassicosts		*	*			
aphies subtriangulata	***	***		*	**	
aphies australis		**	*		**	**
yclomactra ovata					**	
calpomactra scalpellum	*					
pisula aequilateralis	*					
ari lineolata	*	*		*		
ari stangeri	*	*	*			*
oletellina nitida	*			*		
ellina gaimardi	*					
ellina liliana	**			*	*	**
orbula zelandica		*				
yadora striata	***	***				
yadors boltoni	**	*				
ephalopods						
pirula spirula	*					